

REMARKS

Claim status

Claims 1, 3-5, 8-17, 28, 30, 32, 34-35, 38-40, 42-43, 45-47, 49-52, 54-57, 59-62, and 64 were pending in the case at the time of the Advisory Action. Claim 1 is currently amended herein. Claims 1, 3-5, 8-17, 28, 30, 32, 34-35, 38-40, 42-43, 45-47, 49-52, 54-57, 59-62, and 64 are currently pending in the application.

Section 103 rejections

In the final Office action of February 6, 2008, claims 1, 3-4, 8, 40, 43, 46, 47, and 50-52 were rejected under 35 U.S.C. 103(a) as being unpatentable over Prutchi et al. (US 6,141,585), hereinafter Prutchi, in view of Meier (EP 1,062,979 A2), hereinafter Meier. It is noted that reference to the English version of Meier (U.S. 6,522,924) is made herein.

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

Independent claim 1 recites a device for delivering electrical stimulation pulses to body tissue through a stimulation electrode, comprising:

energy storage means for providing electrical stimulation energy to the stimulation electrode from an energy source;

a first switch with which the energy storage means is switchably connected to the energy source for charging the energy storage means;

an electrode connection for connecting the stimulation electrode to the device for delivering electrical stimulation pulses to the body tissue;

a second switch with which the energy storage means is switchably connected to the electrode connection for the delivery of a stimulation pulse;

means for monitoring stimulation outcome during a time interval between 0 milliseconds and 10 milliseconds after said delivery of a stimulation pulse, wherein said means for monitoring stimulation outcome does not use active measurement pulses from an active current source or an active voltage source;

a short-circuit switch with which the electrode connection, after delivery of the stimulation pulse, is switchably and at least indirectly connected to a ground potential such that, in the case of a connected and implanted electrode, a capacitance can be discharged by way of the body tissue wherein the capacitance includes at least one Helmholtz capacitance produced on the surface of the stimulation electrode in conjunction with surrounding body fluid or the body tissue; and

a control unit which is connected to at least the first switch, the second switch, and the short-circuit switch for switching the respective switches and which is adapted to separate the electrode connection from the energy storage means after delivery of the stimulation pulse and at least indirectly connect the electrode connection to the ground potential;

wherein the means for monitoring stimulation outcome during said time interval is connected to the electrode connection and is adapted to detect a drop in a voltage during said time interval at the capacitance or a rise in a short-circuit current during said time interval at the capacitance, said drop in voltage or said rise in short-circuit current being representative of a characteristic drop in a myocardium impedance of said body tissue indicating stimulation success.

In the Examiner-initiated interview of April 16, 2008, the Examiner suggested Applicant amend claim 1 such that it positively recites those elements of which the claimed invention allegedly “does not rely”. The Examiner also suggested Applicant amend claim 1 such that the language positively requires that the “means for monitoring stimulation outcome” measure the voltage or current during a time interval being between 0 milliseconds and 10 milliseconds after delivery of stimulation in order to overcome the rejections of claims 1, 3, 4, 8, 40, 43, 46, 47 and 50-52 under 35 U.S.C. 103(a) as being unpatentable over Prutchi in view of Meier (see the final

rejection of February 6, 2008). Applicant agreed to make the suggested amendments and faxed a proposed amendment of claim 1 to the Examiner for review and for use as a basis for a possible Examiner's amendment of claim 1. The Examiner subsequently noted in the interview summary that although the proposed amendments agreed upon would overcome the rejections applied against the claims using Prutchi in view of Meier (emphasis added), upon conducting a subsequent search it appears to the Examiner that Molin (U.S. 2002/0123773), hereinafter Molin, may be applicable for use in rejection of the amended claim 1. The Examiner states that Molin expressly discloses of measuring a voltage drop over time at a tank capacitor during a time interval immediately following delivery of a stimulation pulse (i.e., during a time interval starting at 0 milliseconds and continuing until the end of the pulse) without use of active measurement pulses from an active current source or an active voltage source.

Claim 1 as amended herein is the same as the proposed amended claim 1 of the Examiner-initiated interview. Therefore, it is respectfully submitted that claim 1 overcomes the rejection with respect to Prutchi in view of Meier as stated by the Examiner in the interview summary.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claim 1 is not unpatentable over Prutchi in view of Meier, and it is respectfully submitted that independent claim 1 defines allowable subject matter. Also, since claims 3-4, 8, 40, 43, 46, 47, and 50-52 depend either directly or indirectly from claim 1, it is respectfully submitted that claims 3-4, 8, 40, 43, 46, 47, and 50-52 define allowable subject matter as well.

Applicants respectfully request that the rejection of claims 1, 3-4, 8, 40, 43, 46, 47, and 50-52 U.S.C. 103(a) be removed.

In the final Office action of February 6, 2008, claims 5, 28, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prutchi in view of Meier as applied to claim 1 and 3-4 above, and further in view of Lewyn et al., (US 4,114,627), hereinafter Lewyn.

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

As described above, it is respectfully submitted that neither Prutchi, Meier, nor the combination thereof teaches, suggests, or renders obvious the invention of independent claim 1.

Furthermore, neither Prutchi, Meier, Lewyn, nor the combination thereof teaches, suggests, or renders obvious the invention of independent claim 1.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claim 1 is not unpatentable over Prutchi, Meier, Lewyn, nor the combination thereof, and it is respectfully submitted that independent claim 1 defines allowable subject matter. Also, since claims 5, 28, and 30 depend either directly or indirectly from claim 1, it is respectfully submitted that claims 5, 28, and 30 define allowable subject matter as well.

Applicants respectfully request that the rejection of claims 5, 28, and 30 under U.S.C. 103(a) be removed.

In the final Office action February 6, 2008, claims 55-57 and 60-62 are rejected under 35 U.S.C. 103(a) as being unpatentable over Prutchi in view of Meier as applied to claims 1, 40, 43, 46, 47, and 50-52 above, and further in view of Paul (US 5,713,931), hereinafter Paul.

Applicants respectfully traverse the foregoing rejections in view of the above pending claims and for reasons set forth hereafter.

As described above, it is respectfully submitted that neither Prutchi, Meier, nor the combination thereof teaches, suggests, or renders obvious the invention of independent claim 1.

Furthermore, neither Prutchi, Meier, Paul, nor the combination thereof teaches, suggests, or renders obvious the invention of independent claim 1.

Therefore, in view of at least the foregoing, it is respectfully submitted that independent claim 1 is not unpatentable over Prutchi, Meier, Paul, nor the combination thereof, and it is respectfully submitted that independent claim 1 defines allowable subject matter. Also, since claims 55-57 and 60-62 depend either directly or indirectly from claim 1, it is respectfully submitted that claims 55-57 and 60-62 define allowable subject matter as well.

Applicants respectfully request that the rejection of claims 55-57 and 60-62 under U.S.C. 103(a) be removed.

In Anticipation of Molin

With respect to Molin, Applicants do not believe that Molin anticipates or renders obvious the invention of claim 1. The measurement described in Molin is directed to measure the impedance of the lead in order to determine whether this impedance remains within acceptable limits (see paragraph [0005] of Molin). For this reason, three measurements are made in order to isolate the lead impedance from, inter alia, the connection capacitor C', the Helmholtz capacitor Ch and so on (see paragraphs [0024] to [0029] of Molin). This kind of measurement requires that the heart's impedance remains constant during the three measurements. Otherwise, the determination of the lead impedance by means of the three measurements as described in Molin would be impossible.

On the other hand, the invention of claim 1 of the present application is directed to the determination of a drop in the myocardium's impedance immediately after delivery of a stimulation pulse. This drop only occurs if the stimulation pulse is strong enough to capture the myocardium.

If one of the three measurements disclosed in Molin would be carried out at the point of time when the myocardium's impedance has dropped, the system according to Molin would simply determine a seemingly smaller lead impedance.

Allowable Subject Matter

In the final Office action of February 6, 2008, claims 9-17, 32, 34, 35, 38, 39, 42, 45, 49, 54, 59 and 64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Applicants thank the Examiner for identifying the allowable subject matter above. However, Applicants believe that independent claim 1 is allowable in its present form and,

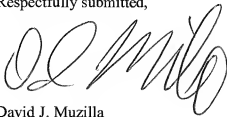
therefore, have not re-written any of the above identified claims in independent form as suggested by the Examiner at this time.

Applicants respectfully submit that independent claim 1 defines allowable subject matter. Also, since claims 9-17, 32, 34, 35, 38, 39, 42, 45, 49, 54, 59 and 64 depend either directly or indirectly from claim 1, it is respectfully submitted that claims 9-17, 32, 34, 35, 38, 39, 42, 45, 49, 54, 59 and 64 define allowable subject matter as well.

Applicants respectfully request that the objection of claims 9-17, 32, 34, 35, 38, 39, 42, 45, 49, 54, 59 and 64 be removed and that allowance of claims 9-17, 32, 34, 35, 38, 39, 42, 45, 49, 54, 59 and 64 in their present dependent form will be forthcoming.

Accordingly, the Applicants respectfully request reconsideration of the rejections and objections based on at least the foregoing. After such reconsideration, it is urged that allowance of all pending claims will be in order.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'D J Muzilla', written in a cursive, flowing style.

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